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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,880	02/27/2004	David A. Trout	17992	7111

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EXAMINER

GUSHI, ROSS N

ART UNIT PAPER NUMBER

2833

DATE MAILED: 11/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/788,880

Applicant(s)

TROUT ET AL.

Examiner

Ross N. Gushi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-68 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 13-18, 24, 25, 28, 30, 31, 33-39, 44, 46-48, 53-55, 57-62, 64 and 66 is/are rejected.
- 7) ☒ Claim(s) 11, 12, 19-23, 26, 27, 29, 32, 40-43, 45, 49-52, 56, 63, 65, 67 and 68 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/21/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/9/04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in —

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a);

Claims 1, 2, 6, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Grabbe et al ("Grabbe").

Per claim 1, Grabbe discloses an LGA interconnect, comprising a substrate 18 and a plurality of contact assemblies 20, said substrate having a plurality of apertures 26 therethrough arranged in an array, each said contact assembly comprised of at least one metal contact 22 and an insulative member 24, said insulative member being positioned in said aperture, positioning a first contact member 32 of said metal contact above said substrate and a second contact 34 of said metal contact below said substrate, said insulative member isolating said metal contact from said substrate.

Per claim 2, said insulative member is attached to said metal contact.

Per claim 6, said insulative member also retains said contact assembly to said

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substrate.

Per claim 7, said metal contact is comprised of an intermediate base portion with said first and second contact members extending from opposite ends thereof.

Claims 1, 3, 4, 5-10, and 13-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Harper, Jr. et al. ("Harper").

Per claim 1, Harper discloses an LGA interconnect, comprising a substrate and a plurality of contact assemblies, said substrate having a plurality of apertures therethrough arranged in an array, each said contact assembly comprised of at least one metal contact 213 and an insulative member 243, said insulative member being positioned in said aperture, positioning a first contact member of said metal contact above said substrate and a second contact of said metal contact below said substrate, said insulative member isolating said metal contact from said substrate.

Per claim 3, said insulative member is overmolded on said metal contact.

Per claim 4, the substrate is rigid.

Per claim 5, said rigid substrate is comprised of metal 245.

Per claim 6, said insulative member also retains said contact assembly to said substrate.

Per claim 7, said metal contact is comprised of an intermediate base portion with said first and second contact members extending from opposite ends thereof.

Per claim 8, said member is overmolded at said intermediate insulative portion.

Per claim 9, said overmolded insulative member has a head portion larger than

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said aperture and a shank portion profiled to be received said aperture.

Per claim 10, said insulative member is made of plastic material.

Per claim 13, said first and second contact members extend as cantilever beams from said insulative member.

Per claim 14, said contact assemblies are arranged on said substrate with said cantilever beams oriented at an angle as measured about an axial centerline through said apertures, which is normal to said substrate.

Per claim 15, the angle is approximately 45 degrees (see figure 6a).

Per claim 16, the contact assemblies are arranged in at least two arrays as claimed.

Per claim 17, said least two arrays are aligned along at least one diagonal line across said substrate.

Per claim 18, said at least two arrays are aligned along plural diagonal lines.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 24, 25, 28, 30, and 31, 33-39, 44, 46-48, 53, 54, 55, 57-62, 64, and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grabbe and Harper as in claims 1-4, 5-10, and 13-18. Regarding claim 24, Grabbe and Harper do not show the frame or housing. McHugh discloses housing 11 extending around substrate 12. At

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the time of the invention, it would have been obvious to include a housing around the Grabbe or Harper substrates as taught in McHugh. The suggestion or motivation for doing so would have been to securely guide and mount the chip on the substrate as taught in McHugh and as is well known in the art.

Per claim 25, the housing is insulative.

Regarding claim 28, McHugh discloses pins 121 on the substrate inserted in to holes 112 on the frame instead of vice versa. At the time of the invention, it would have been obvious to reverse the positions of the pins and hole on the frame and substrate. Such a modification would have been a matter of obvious engineering choice, being merely a reversal of parts. In re Gazda, 104 USPQ 400 (CCPA 1963).

Per claim 30, McHugh discloses stop members located along said housing to provide stop positions for said chip.

Per claim 31, said stop members are integrally formed in said housing.

Claims 33-39, 44, 46-48, 53, 54, 55, 57-62, 64, and 66 are rejected for the reasons pertaining to claims 1-6, 13-18, 24, 25, 28, 30 and 31.

Allowable Subject Matter

Claims 11, 12, 19-23, 26, 27, 29, 32, 40-43, 45, 49-52, 56, 63, 65, 67, and 68 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Regarding claim 11, the prior art does not suggest the device as claimed, including the combination of all the claimed elements, the combination including that the shank portion comprises a slot profiled to be received in an edge of

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said substrate, adjacent said aperture. Regarding claim 19, the prior art does not suggest the device as claimed, including the combination of all the claimed elements, the combination including that the contact assemblies are arranged in quadrants, with all cantilever portions projecting generally towards a geometrical center of said substrate. Regarding claim 20, the prior art does not suggest the device as claimed, including the combination of all the claimed elements, the combination including that each member comprises plural metal contacts positioned insulative therein. Regarding claim 26, the prior art does not suggest the device as claimed, including the combination of all the claimed elements, the combination including that the substrate is retained to said housing by overmolding said housing around a periphery of said substrate. Regarding claim 29 the prior art does not suggest the device as claimed, including the combination of all the claimed elements, the combination including that the apertures include openings in a surrounding relationship to said apertures, defining resilient spring edges at said apertures. Regarding claim 32 the prior art does not suggest the device as claimed, including the combination of all the claimed elements, the combination including that said stop members are inserts having more rigidity than the material which forms the housing. Claims 40-43, 45, 49-52, 56, 63, 65, 67, and 68 are objected to for the reasons pertaining to claims 11, 12, 19-23, 26, 27, 29, and 32.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ross Gushi whose telephone number is (571) 272-2005. If attempts to reach the examiner by phone are unsuccessful, the examiner's

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supervisor, Paula A. Bradley, can be reached at 571-272-2800 extension 33. The phone number for the Group's facsimile is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



ROSS GUSHI
PRIMARY EXAMINER